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Jensen, J. L. Journal of the Royal Agricultural Society of England, Vol. XXIV., Part II. *The propagation and prevention of smut in oats and barley.*

This is the title of a paper which has been reprinted in pamphlet form from the journal of the Royal Agricultural Society of England. The paper is full of practical ideas, many of which are comparatively new, and deserves careful attention by all grain-growers.

The paper is divided into three parts: A. Propagation of smut; B. Varieties of smut; C. Prevention of smut. Under the first head Mr. Jensen states (1) The spores of smut falling on the ground during the summer will not to any appreciable degree affect barley and oats grown in that field in the ensuing season. (2) The spores of smut in farm-yard manure, when applied to the field, will not to any appreciable extent affect oats and barley. (3) Spores of smut adhering externally to the seed of barley and oats are unable, to any appreciable degree, to infect the crop produced from that seed. (4) Although, as is shown by the foregoing, it is impossible to infect oats and barley with smut spores to any appreciable extent by applying them to the seed, yet there can be no doubt that the spores are the reproductive bodies of the fungus by which smut is propagated in nature.

The first three statements are supported by statistics of experiments in which seed was sown in soil containing smut spores, in heavily manured soil, and with spores dusted on the outside of the *seed; in no case was there an appreciable increase in the amount of smut.* Under 4, Mr. Jensen attempts to answer the question, "In what manner does the propagation of smut take place?" His experiments led him to the following solution of the question: Infection takes place by means of spores which, having gained admission within the husk, remain there quiescent until the grain germinates.

Under B is given the results of experiments to determine whether or not the smut which affects barley, oats, and wheat are the same species. The author concludes from these trials that if these smuts are not different species they are at least well marked varieties. He further remarks that to the farmer this information is of importance, as there is no fear of adjacent fields sown with different crops infecting one another; a smutted barley field, for instance, will not infect a field of oats, or *vice versa.*

C. *Prevention of smut.*—The various dressings, such as sulphate of copper in solution, solution of sulphate of copper with quicklime applied about twelve hours afterward, sulphuric acid and water, quicklime with or without subsequent treatment with common salt are first enumerated under this heading. The author then gives the results of his experiments with these preparations as well as with several methods of his own conception, which consisted in exposing the grain to dry and moist heat, also soaking it in water ranging in temperature from 123° to 133° Fahr.

Concerning the action of sulphate of copper (bluestone) Mr. Jensen says that one-fourth per cent. of this salt reduced the per cent. of smutted heads to such an extent that it might be considered practically sufficient. A part of the seed-crop was killed, however, and the crop suffered not inconsiderably. With a 1 per cent. solution about three-fourths of the seed was killed, and a large number of plants remained without rootlets for two or three weeks. This lot was still green when all the others were almost ripe. The remaining experiments demonstrated beyond question that the seed in many cases was destroyed or its vitality was greatly injured by dressing with the preparations enumerated above; they moreover showed that disinfection by heat was the safest and most satisfactory way of treating the grain. The author concludes his remarks on this subject as follows:

> Dressing cereals with sulphate of copper in the usual manner against smut and bunt causes, as a rule, a waste of seed. It is, moreover, injurious to the plants and is unnecessary. Treating the seed with water heated to a temperature of 127° Fahr. for five minutes prevents these diseases equally well and protects barley much better, while it has the advantage of not injuring the seed or the resulting crop.—B. T. GALLOWAY.

KELLERMAN, W. A. Experiment Station, Kansas State Agricultural College. Bulletin No. 5, Dec., 1888. *Preliminary Report on Sorghum Blight.*

The paper describes the appearance of the disease, and gives briefly the results of the laboratory experiments, which were performed by W. T. Swingle.

Plants were examined first with reference to the disease being caused by insects and the theory disproved.

The most common and evident appearance of the disease is in large blotches on the leaves. The roots were examined and found to be diseased also, often to such an extent as to be entirely destroyed, and in this case the stem at the junction of the roots was also diseased; in other cases the stem was intact, except where it had been wounded.

The microscopic examinations resulted in proving the disease to be the work of a micro-organism, the *Bacillus sorghi*, belonging to the group of *Bacteria*. The presence of the germ was demonstrated by the microscope, and the disease was produced on young and apparently healthy plants by inoculating them with a broth containing the organisms.

Sorghum seed was planted at the same time in soil taken from a field of diseased plants and in soil from the greenhouse. The plants which were produced in the former were all badly diseased, and those in the latter not at all or only slightly.

He concludes (1) that it is not wise to use a field in which the disease has been present even in a mild form the year before; (2) when the crop is infected, not even the stubble should be plowed under but collected and burned.